##### January 9, 2018

Mr. George S. Hawkins

CEO and General Manager

District of Columbia Water and Sewer Authority

5000 Overlook Avenue SW

Washington, DC 20032

**RE: Permit No. 6347-R2 to Operate a Modified Enhanced Nitrogen Removal System**

Dear Mr. Hawkins:

Pursuant to sections 200.1 and 200.2 of Title 20 of the District of Columbia Municipal Regulations (20 DCMR), a permit from the Department of Energy and Environment (the Department) shall be obtained before any person can construct or operate a stationary source in the District of Columbia. The application of the District of Columbia Water and Sewer Authority (“the Permittee”) to operate a Modified Enhanced Nitrogen Removal (ENR) System located on the property of the Blue Plains Advanced Wastewater Treatment Plant, 5000 Overlook Avenue SW, Washington, DC, has been reviewed. The equipment consists of the following significant components:

* **Denitrification Carbon Storage and Feed System**:
* Two (2) new Denitrification Carbon Methanol Vapor Scrubbers (DCMVS 1 and 2);
* Four (4) new 60,000 gallon Denitrification Carbon Storage Tanks (DCST 1, 2, 3, and 4);
* Three (3) Denitrification Carbon Storage Tanks Mixing Pumps;
* Four (4) Denitrification Carbon Feed Pumps;
* Four (4) Denitrification Carbon Transfer Pumps;
* Eight (8) Denitrification Reactors and two (2) post aeration tanks; and
* Three (3) Methanol Unloading Pumps.
* **Alternate Carbon Storage and Feed System:**
* Two (2) new Alternate Carbon Methanol Vapor Scrubbers (ACMVS 1 and 2);
* One (1) new 30,000 gallon Alternate Carbon Storage Tank (ACST-1);
* Two (2) Alternate Carbon Unloading Pumps; and
* Five (5) Alternate Carbon Mixing and Transfer Pumps.
* **Blended Alternate Carbon (BAC) Storage and Feed System:**
* Three (3) Blended Alternate Carbon Mixing Pumps;
* Two (2) Blended Alternate Carbon Transfer Pumps;
* Two (2) new Blended Alternate Carbon Feed Pumps;
* One (1) 30,000 gallon Alternate Carbon Blend Storage Tank (ACST-2);
* Three (3) 10,000 gallon Blended Alternate Carbon Storage Tanks (MST 5, 6, and 7) for storage of methanol or a blend (already existing); and
* One (1) 650 gallon day tank for use with BAC or methanol (already existing).

The primary control devices consist of the following:

| Emissions Control Device | | | |
| --- | --- | --- | --- |
| Scrubber ID | Number | Scrubber Name | Description |
| DCMVS | 1, 2 | Packed Tower Scrubber | Two (2) Duall Packed Tower Carbon Methanol Vapor Scrubbers used to control emissions of methanol by a factor of 99.0% from DCST 1, 2, 3, and 4. |
| ACMVS | 1, 2 | Packed Tower Scrubber | Two (2) Duall Packed Tower Alternate Carbon Methanol Vapor Scrubbers used to control emissions of methanol by a factor of 99.0% from ACST 1 and 2 as well as MST 5, 6, and 7 and the 650 gallon day tank. |

Based on the submitted plans and specifications as detailed in the application dated April 1, 2010 and enclosed with the letter of the same date, supplemental information dated June 11, 2013, letter of April 18, 2013, letter of July 28, 2016 with requested modifications and supporting documentation, and request for operating permit dated September 26, 2016, your application is hereby approved subject to the following conditions:

I. General Requirements:

a. The equipment shall be constructed and, upon receipt of a subsequent operating permit, operated, in accordance with the air pollution control requirements of 20 DCMR.

b. This permit expires on January 8, 2023 [20 DCMR 200.4]. If continued operation after this date is desired, the Permittee shall submit an application for renewal by September 8, 2022.

c. Operation of equipment under the authority of this permit shall be considered acceptance of its terms and conditions.

1. The Permittee shall allow authorized officials of the District, upon presentation of identification, to:

1. Enter upon the Permittee’s premises where a source or emission unit is located, an emissions related activity is conducted, or where records required by this permit are kept;

2. Have access to and copy, at reasonable times, any records that must be kept under the terms and conditions of this permit;

3. Inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor, at reasonable times, any substance or parameter for the purpose of assuring compliance with this permit or any applicable requirement.

e. This permit shall be kept on the premises and produced upon request.

f. Failure to comply with the provisions of this permit may be grounds for suspension or revocation. [20 DCMR 202.2]

g. The Permittee shall not initiate construction, installation, or modification of any equipment or facility which emits or controls air pollutants prior to obtaining a construction permit from the Department in accordance with 20 DCMR 200.

1. If not already completed, within 12 months of the issuance of this permit to operate, the Permittee shall apply for an amendment to an existing Chapter 3 operating permit or shall amend any pending Chapter 3 operating permit application to include the requirements of this permit. [20 DCMR 301.1(a)(2)]

II. Emission Limitations:

1. Visible emissions shall not be emitted into the outdoor atmosphere from the emission units and control equipment, except that discharges not exceeding forty percent (40%) opacity (unaveraged) shall be permitted for two (2) minutes in any sixty (60) minute period and for an aggregate of twelve (12) minutes in any twenty-four hour (24 hr.) period during start-up, cleaning, adjustment of combustion controls, if any, or malfunction of the equipment [20 DCMR 606.1].

*Note that 20 DCMR 606 is subject to an EPA-issued call for a State Implementation Plan (SIP) revision (known as a “SIP call”) requiring the District to revise 20 DCMR 606. See “State Implementation Plans: Response to Petition for Rulemaking; Restatement and Update of EPA’s SSM Policy Applicable to SIPs; Findings of Substantial Inadequacy; and SIP Calls To Amend Provisions Applying to Excess Emissions During Periods of Startup, Shutdown and Malfunction”, 80 Fed. Reg. 33840 (June 12, 2015). It is likely that this federal action will result in changes to the requirements of 20 DCMR 606. Any such changes, once finalized in the DCMR, will supersede the language of Condition II(a) as stated above.*

b. An emission into the atmosphere of odorous or other air pollutants from any source in any quantity and of any characteristic, and duration which is, or is likely to be injurious to the public health or welfare, or which interferes with the reasonable enjoyment of life or property is prohibited. [20 DCMR 903.1] *Note: This condition is District enforceable only.*

c. The Permittee shall ensure that the vented methanol control system and handling procedures, and the closed vent system of the DCST at the facility are consistent with the optimal operation of the methanol scrubbing system so as to achieve a removal efficiency of at least 99.0 percent of methanol vapors from the storage tanks exhaust streams (including both working and breathing losses) so as to achieve a maximum methanol outlet concentration of 980 ppmv. [20 DCMR 201]

III. Operational Limitations:

a. The methanol scrubbers shall be maintained to remain operative or effective, and shall not be removed [20 DCMR 107.1]. In order to ensure that this occurs, the equipment shall be operated and maintained in the following manner:

1. The methanol scrubbers shall maintain the pollutant removal efficiencies listed in Condition II(c);
2. The chemical storage tanks, including the glycerol tanks and other auxiliary equipment shall be maintained and operated in accordance with manufacturer’s recommendations so as to minimize fugitive emissions of VOC and/or methanol vapor, and to assure there are no leaks as indicated by instrument readings above the levels specified in the Department approved Leak Detection and Repair Plan dated March 2016;
3. The methanol scrubber systems shall be operated and maintained at all times in a manner consistent with the manufacturer’s recommendations regarding scrubber operation and maintenance;
4. The spent once-through scrubbing water shall be drained by gravity and properly routed to the nitrification/denitrification treatment basins at all times;

5. Operating pressure drop across each scrubbing column must be maintained between 3 and 9 inches of water unless another range is approved or specified in writing by the Department. Any request by the Permittee for a different range shall include an analysis and justification why the proposed range will maintain optimal emission control levels by the equipment;

6. Operating liquid flow rate in each scrubber shall be maintained between 2 and 7 gallons per minute as well as at a rate sufficiently low as to not cause flooding in the scrubber;

7. Operating gas flow rate to each scrubber shall not exceed a maximum of 210 actual cubic feet per minute; and

8. The demister and scrubber packaging shall be cleaned once the pressure drop across the scrubber exceeds 4.5 inches of water column.

b. The Permittee shall utilize only pure methanol or methanol/glycerol blends in the ENR facility, unless prior approval for the use of other carbon compounds has been granted by the Department.

c. The Permittee shall ensure that the methanol injection rate does not exceed 1,625 gallons per hour, either alone or blended with glycerol (as continuously monitored by the PCS), so as to minimize the emissions of methanol and/or odor from both the denitrification and aeration processes.

d. The Permittee shall ensure that the integrity of the vapor recovery mechanism of the delivery vessels and the methanol and/or glycerol storage tanks are maintained at all times and that all storage and delivery vessels are properly connected to the vapor control mechanism prior to beginning unloading [20 DCMR 704.1, 704.2, and 704.6].

e. All pumps for handling of methanol or glycerol shall be of the magnetic sealless type as proposed in the application for this permit. No compressors were listed in the application. Thus, no compressors shall be installed without a review by the Department of the type of seals to be used and approval of such seals under separate cover. [20 DCMR 711]

f. Control of Fugitive Dust

The Permittee shall ensure that fugitive dust from the facility is controlled in accordance with 20 DCMR 605 as follows:

1. Reasonable precautions shall be taken to minimize the emission of any fugitive dust into the outdoor atmosphere. The reasonable precautions shall include, but not be limited to, the following:

A. In the case of unpaved roads, unpaved roadways, and unpaved parking lots;

i. Use of binders, chemicals, or water in sufficient quantities and at sufficient frequencies to prevent the visible emission of dust due to the movement of vehicles or of the wind; and

ii. Prompt clean-up of any dirt, earth, or other material from the vicinity of the road, roadway, or lot which has been transported from the road, roadway, or lot due to anthropogenic activity or due to natural forces.

B. In the case of paved roads, paved roadways, and paved parking lots: Maintenance of the road, roadway, lot, or paved shoulder in a reasonably clean condition through reasonably frequent use of water, sweepers, brooms, or other means, through reasonably frequent removal of accumulated dirt from curb-side gutters, through reasonably prompt repair of pavement, or through any other means;

C. In the case of vehicles transporting dusty material or material which is likely to become dusty:

i. Fully covering the material in question, with a tarpaulin or other material; and

ii. Operation, maintenance, and loading of the vehicle, distribution of the loaded material on or in the vehicle, and limiting the quantity of material loaded on or in the vehicle, so that there will be no spillage of the material onto the roads;

D. In the case of vehicles which accumulate dirt on the wheels, undercarriages, and other parts of the vehicle, due to the movement of the vehicle on dusty, dirty or muddy surfaces: Water washing of all of the dirty parts of the vehicle to thoroughly remove the dirt before or immediately after the vehicle leaves the dusty, dirty, or muddy surface;

E. In the case of the demolition of buildings or structures: Use, to the extent possible, of water;

F. In the case of removal of demolition debris which is dusty or likely to become dusty: Use of water to thoroughly wet the material before moving or removing the material and keeping it wet or otherwise in a dust-free condition until eventual disposal;

G. In the case of loading and unloading of dusty material and in the case where dry sand-blasting or dry abrasive cleaning is necessary: Use of enclosed areas or hoods, vents, and fabric filters. If it is shown to the satisfaction of the District that use of enclosed areas, hoods, vents, and fabric filters is not possible, alternate control techniques acceptable to the District and designed to minimize the emissions to the extent possible shall be utilized; and

H. In the case of stockpiles of dusty material: Use, where possible, of closed silos, closed bins or other enclosures which are adequately vented to fabric filters. Where the use of closed silos, closed bins, or other enclosures is not possible, thorough wetting of the material before loading onto the stockpile and keeping the stockpile wetted, covered, or otherwise in a non-dusty condition.

2. The emission of fugitive dust from the following is prohibited:

A. Any material handling, screening, crushing, grinding, conveying, mixing, or other industrial-type operation or process;

B. Heater-planers in repairing asphaltic concrete pavements;

C. Portable tar-melters, unless close-fitting lids, in good repair, for the tar-pots are available and are used;

D. The ventilation of any tunneling operation; or

E. The cleaning of exposed surfaces through the use of compressed gases.

3. All persons shall comply with the provisions of this Condition and those of the Soil Erosion and Sedimentation Control Act of 1977 (D.C. Law 2-23).

4. In those circumstances where it is not possible to comply with specific provisions of both this Condition and the Soil Erosion and Sedimentation Control Act of 1977 (D.C. Law 2-23), the provisions of the Soil Erosion and Sedimentation Control Act of 1977 (D.C. Law 2-23), shall prevail.

g. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate the equipment covered by this permit in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

IV. Monitoring and Testing Requirements:

a. The Permittee shall monitor the status and level of repair of the methanol scrubbers and all other process equipment subject to this permit to ensure compliance with Conditions III(a), III(e) and III(g) of this permit.

b. The Permittee shall monitor the facility to ensure that visible emissions, odor and other nuisance air pollutants are not emitted in such quantities as to create any violation of Condition II(a) or (b) of this permit.

c. The Permittee shall inspect the chemical storage tanks, scrubbers, and auxiliary equipment as detailed below in accordance with the Department-approved schedule contained in the Leak Detection and Repair Plan dated March 2016, to ensure they are in good operative condition, and to minimize leakage of methanol, glycerol, or a blend of these two compounds, and other carbon source vapor. In order to show compliance with Condition III(a)(2), as part of this inspection, the Permittee shall inspect all pumps, connectors, flanges, caps, valves, and other potential sources of leaks (excluding the stack outlet for the scrubbers). Pumps, connectors and valves shall be inspected annually, along with a visual inspection of the closed-vent system. Pressure relief devices do not require routine monitoring (action to be taken only when relieved). No monitoring is required for equipment in service less than 300 hours per year, and equipment that is unsafe to monitor should only be monitored only during safe-to-monitor times. Should any component be found to be leaking in two subsequent monitoring events, the frequency of monitoring shall be increased to quarterly until four subsequent monitoring events do not result in any leaks for that component.

d. The Permittee shall monitor the differential pressure across the odor scrubber continuously during operation via a differential pressure gauge connected to a process control system (PCS). An alarm shall be set to notify the operator(s) immediately if the pressure drop deviates from the requirements set forth in Condition III(a)(5).

e. The Permittee shall monitor the flow rate of the water to the methanol scrubbers continuously during operation with the use of a process control system (PCS). An alarm shall be set to notify the operator(s) immediately if the flow rate deviates from the requirement set forth in Condition III(a)(6).

f. The Permittee shall monitor the operation of the fan (scrubber inlet side) continuously during operation with the use of a process control system (PCS). An alarm shall be set to notify the operator(s) immediately if the fan becomes non-operational.

g. In order to comply with Conditions III(b) and (c), the Permittee shall monitor the following:

1. Monitor the type of carbon source being used at all times; and

2. Monitor the methanol injection rate continuously with the PCS to ensure that it does not exceed 1,625 gallons per hour.

h. Permittee shall install air flow meters on the main air headers to the post-aeration tanks, in order to detect excessive feeding of methanol, glycerol, or a blend of these two materials into the process circuit.

i. On at least a quarterly basis, the Permittee shall visually inspect the scrubbers, vapor headers, methanol and glycerol storage tank loading stations, and other associated equipment to ensure that all parts of the equipment used for methanol loading are being properly maintained.

j. Before initiating tank filling during delivery of methanol or glycerol, the Permittee shall take affirmative action to ensure that the delivery vessel is properly certified and is properly vented through the receiving vessel to the methanol vapor scrubbers. In order to be properly certified, the delivery vessel must have been leak tested within the past year in accordance with 20 DCMR 704.4.

k. The Permittee shall monitor the facility for compliance with the fugitive dust emissions limits contained in Condition III(f) of this permit and take appropriate action to address any excess fugitive dust from the facility.

l. The Permittee shall conduct and allow the Department access to conduct tests of air pollution emissions from any source as requested. [20 DCMR 502.1]

m. Process monitors (such as pressure, flow rate and feed rate) must be operational at all times when the associated process equipment is operating except during service outages not to exceed 24 hours per event. Service outage is defined as the time the process monitor is not operating while permitted process is operating excluding quality assurance and routine scheduled maintenance activities. The process monitors shall be operational for 99% of the annual potential operating time (measured on a 12-month rolling basis) excluding quality assurance and routine scheduled maintenance activities. The facility shall not use the process monitor downtime as a shield of a known violation of an emission standard or other known compliance problem.

V. Record Keeping Requirements: [20 DCMR 200.7]

a. The Permittee shall maintain all records, including records of visual inspections, necessary for determining compliance with this permit in a readily accessible location for five (5) years and shall make these records available to the Department upon written or verbal request.

b. At a minimum, the following information shall be recorded and maintained in accordance with Condition V(a) of this permit. All such records must be either initialed or signed by the person recording the information or maintained in a verifiable electronic system whose information can be certified as to its accuracy.

1. The Permittee shall maintain records of all routine and non-routine maintenance performed on the scrubbers as well as all other equipment covered by this permit. These records shall include a description of the maintenance activity, any problem being corrected or other reason for the maintenance activity, and a statement indicating whether or not the problem was corrected;
2. The Permittee shall keep record of any odor complaints received as well as any deviations from the requirements of Conditions II(a) or (b) of this permit, as well as any actions taken to correct any identified visible emission or odor problem;
3. The Permittee shall keep records of the results of the quarterly inspections of the storage tanks, scrubbers, and auxiliary equipment required pursuant to Condition IV(c);
4. The Permittee shall record, at least once per shift, the differential pressure readings across each scrubber when in operation to document compliance with Condition III(a)(5);
5. The Permittee shall record, at least once per shift, the flow rate of the water to each scrubber when in operation to document compliance with Condition III(a)(6);
6. The Permittee shall record, at least once per shift, the operating gas flow rate to each scrubber when in operation to document compliance with Condition III(a)(7);
7. The Permittee shall record any deviations from the methanol (or equivalent) feed rate requirements specified in Conditions III(c) and IV(g);
8. The Permittee shall maintain records of any unpermitted releases from the scrubber system or deviations from any of the conditions of this permit;
9. The Permittee shall maintain records of any equipment shutdowns related to improper operation of a control device and records of any control device malfunctions;
10. The Permittee shall maintain records of the training of the operators and maintenance staff to minimize the production of emissions during operation;
11. The Permittee shall maintain records of each delivery of methanol or glycerol as well as records of the actions taken to ensure proper certification of each delivery vessel and proper connection of the delivery vessel to the storage vessels before tank filling as required under Condition IV(j);
12. The Permittee shall maintain records of any deviations from the fugitive dust standards set forth in Condition III(f) and any corrective actions taken to return to compliance;
13. The Permittee shall maintain records of the results of any testing performed pursuant to Condition IV(l); and
14. The Permittee shall maintain records of the date, time, and duration (in minutes) of any process monitor service outages and the percent of the annual potential operating time that each process monitor is not operational (excluding quality assurance and routine scheduled maintenance activities). The percent downtime records shall be maintained on a 12-month rolling basis.

c. The Permittee shall maintain records of the following in order to demonstrate compliance with Condition II(c):

1. The pressure drop across the odor scrubber pursuant to Condition IV(d),

2. Cleaning of the demister and scrubber packing pursuant to Condition III(a)(8); and

3. Leak detection and repair activities as described in the Department-approved Leak Detection and Repair Plan dated March 2016.

VI. Reporting Requirements: [20 DCMR 200.7]

a. The Permittee shall immediately report to the Department, by telephone, any permit deviation that poses an imminent and substantial danger to public health, safety, or the environment. This shall be reported to the Department’s Emergency Operations number at (202) 645-5665. [20 DCMR 302.1(c)(3)(C)(ii)]

b. In addition to complying with Condition VI(a) and any other reporting requirements mandated by the 20 DCMR or this permit, the Permittee shall, within thirty (30) calendar days of becoming aware of any occurrence of excess emissions, supply the Department in writing with the following information:

1. The name and location of the facility;

2. The subject source(s) that caused the excess emissions;

3. The time and date of the first observation of the excess emissions;

4. The cause and estimated/expected duration of excess emissions;

5. For sources subject to numerical emission limitations, the estimated rate of emissions (expressed in the units of the applicable emission limitation) and the operating data and calculations used in determining the magnitude of the excess emissions; and

6. The proposed corrective actions and schedule to correct the conditions causing the excess emission.

c. Whenever it is necessary to shut down both methanol vapor scrubbers associated with either the denitrification carbon storage and feed system or the alternative carbon storage and feed system without shutting down the rest of the process the Permittee must report the planned shutdown to the District at least 48 hours prior to shutdown. The prior notice must include, but is not limited to the following [20 DCMR 107.2]:

1. Identification of the specific facility to be taken out of service, as well as its location and permit number;
2. The expected length of time that the air pollution control equipment will be out of service;
3. The nature and quantity of emissions of air pollutants likely to occur during the shutdown period;
4. Measures that will be taken to minimize the length of shutdown period; and
5. The reasons that it would be impossible or impractical to shutdown the source operation during the maintenance period. Prior to undertaking this shutdown, the approval of the Department must be obtained.

d. The results of all testing performed pursuant to Conditions IV(j) and IV(m) shall be submitted within sixty (60) days of the test.

e. All reports required pursuant to this permit shall be submitted to:

Chief, Compliance and Enforcement Branch

Air Quality Division

1200 First Street NE, 5th Floor

Washington, DC 20002

If you have any questions, please call me at (202) 535-1747 or John Nwoke at (202) 724-7778.

Sincerely,

Stephen S. Ours, P.E.

Chief, Permitting Branch

SSO:JCN

cc: John C. Nwoke

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